

A CONTRIBUTION TO THE STUDY OF HYS-
TERIA, BEARING ON THE QUESTION
OF OÖPHORECTOMY.*

By G. L. WALTON, M.D.,

BOSTON.

WHILE we have every reason to congratulate ourselves that we have cut loose from the ancient view that all hysteria owed its origin to a disordered uterus, we can not overlook the fact that there exists a certain number of cases (small perhaps in comparison) in which the nervous symptoms are secondary to organic pelvic disease as peritonitis, cellulitis, or cystic degeneration of the ovaries. Certainly when the hysterical symptoms, occurring in persons possessing no hereditary nervous susceptibility, date from the accession of the pelvic trouble, and disappear with its relief, the etiological connection between the local and the general disturbance can hardly be doubted.

It is to this class of cases as distinguished from these in which the local symptoms are secondary to the hysteria, that the question of oöphorectomy should be narrowed. We shall perhaps be obliged to include some cases in which no organic disease is suspected, but in which functional menstrual disorders are at the root of the difficulty. We should hesitate long however, I think, in such a case before advising the operation.

In certain cases of hysterical hemianæsthesia and hys-

* Read before the American Neurological Association, New York, June 20, 1884.

tero-epilepsy it seems extremely probable that the implication of the ovaries in an organic disease offers the starting-point for the irritation producing the hysterical condition, and in such cases the prospect of relief from operation is too good to be neglected when milder measures have failed, and when the symptoms are severe enough to make life a burden, a result to which severe pain of various sorts generally contributes largely in these cases.

As to the anatomical connection between ovaries and hysterical symptoms, there can be little doubt that the cortical cerebral nerve cells are the chief sufferers in hysteria, and all symptoms, mental, motor, and sensory, are most satisfactorily explained by increased and decreased activity of these nerve cells, the final centres of sensation and motion, and presumably the seat of the mental processes. In the majority of cases of hysteria the cerebral difficulty is probably a constitutional one, and the ovarian tenderness which rarely fails is merely a local hyperæsthesia, and in such cases no more can be expected from the removal of the ovaries than from the removal of a sensitive spot on the spine or scalp. In cases of hysteria secondary to pelvic disease, as peritonitis, cellulitis, or cystic degeneration of the ovaries, the local tenderness is of more serious import, and signifies that organic changes have taken place involving the rich nervous supply of the ovarian region, and it is probably by the transmission to the brain through the sympathetic nerves of the irritation thus produced that the hysterical symptoms are brought on. Just what changes occur in the brain in hysteria we do not know, and are not likely to decide for some time, but it will not be inappropriate, as bearing on the connection between hysteria and the ovaries, to present a few arguments here in favor of the vaso-motor theory, by no means as underlying all hysteria or all hysterical symptoms, but as best explaining that set

at least of so-called hysterical cases in which hemianæsthesia is the principal symptom, this being a variety of nervous disturbance probably not rarely to be found in cases of ovarian irritation.

It has been urged that the changes in cerebral activity, giving rise to these and all other hysterical symptoms, are dynamic, and not susceptible of explanation by so simple a physical phenomenon as contraction and relaxation of blood-vessels. To me, however, the explanation implicating the blood-vessels is by far the more satisfactory provided it meet all the requirements, and this it seems to do in at least the class of hysterical patients under consideration.

One of the most striking characteristics for instance of these hysterical symptoms is the suddenness with which they can appear and disappear, a few seconds sufficing in many cases for the complete transfer of anæsthesia from one side of the body to the other. Now while we have no grounds for denying the possibility of dynamic changes occurring with equal rapidity, we are dealing with a tangible phenomenon of which we have frequent illustration, in attributing these changes to sudden alteration in the calibre of the blood-vessels. An instant is sufficient time, and a thought is ample stimulus to cause on the one hand a complete dilatation of blood-vessels over a large area, as instanced in the blush, or on the other hand to reduce the same vessels to their smallest proportions, as in the pallor of fear. That these vaso-motor changes affect the brain as well as the integument is seen by the phenomenon of fainting, in which the higher cerebral functions are completely suspended, presumably from lack of nutritive fluid.

This very illustration is perhaps as good as any of the dependence of the cortical cells on their blood supply, and the variability of the functions of those cells with vaso-motor changes.

In view of these facts the sudden loss of function of the cortical cells of half the brain, as seen in *e. g.*, hemianæsthesia, may easily be imagined to supervene suddenly upon a more or less completed contraction of cortical blood-vessels on that side from irritation of the sympathetic system in some part of the body. Loss of function would in this case persist as long as the contraction of vessel so continued, and at the same time the nerve cells would be ready to take up their duties instantly with the return of blood through cessation of the vascular spasm.

The cortical cerebral cells are richly supplied by a set of blood-vessels freely anastomosing with each other but not with the internal vessels of the brain. It is vaso-motor changes in this set of blood-vessels which best explain the unilateral hysterical symptoms, and in those cases in which these symptoms are secondary to organic disease in the ovarian region we need not draw on our imaginations for the source of sympathetic irritation, for the ovaries are richly supplied with sympathetic nerves which can easily be pressed on by exudation or other morbid material in the diseases under consideration.

This theory by no means limits the cerebral disturbance to one side of the brain, nor on the other hand does it preclude a limitation of the vaso-motor change to a small part of the cortex, as, for example, to that concerned in particular motions or sensations. At the same time it well explains the tendency of the symptoms to spread over an entire half of the brain and hence of the body. To explain the predominance of sensory over motor symptoms, or the opposite, we have only to suppose the vascular spasm more complete over one than over another portion of the cortex.

In cases of hemianæsthesia occurring in persons of neurotic inheritance, without pelvic disease, we can not expect to find a local origin for the sympathetic irritation,

but have only to allow that these patients possess by inheritance a peculiarly irritable vaso-motor system, which furnishes the chief basis for the irregularities to which their cerebral functions are liable, instead of ascribing to the cells themselves the irritability called hysterical.

That neurotic patients of all varieties *are* peculiarly liable to vascular irregularities is evidenced by the frequency among them of chills, flushes, ischæmia, sudden swellings of the joints, and other vaso-motor phenomena. In limiting our suppositions, therefore, to this class of changes, we lean rather to the material side, in that we attribute all the symptoms to an already recognized physical condition.

Again, the regularity with which the hysterical symptoms pass in certain cases from side to side during the "transfer," the oscillations continuing sometimes for hours before equilibrium is established, is strangely suggestive of the ebb and flow of a fluid, and, supposing the vaso-motor irritability about alike on the two sides of the body, could be easily explained by the alternate relaxation and contraction of the vessels of the two sides of the brain. I have myself failed to bring about this phenomenon in a hemianæsthetic in whom I considered the hysteria secondary to abdominal irritation, although I have often verified it upon patients in whom the hysteria was constitutional.

I should hesitate to draw any conclusions from so limited an observation, but propose to investigate the subject further. If, however, experience should confirm this result, I would suggest that the difference in susceptibility to "transfer" is due to the persistence of local pelvic irritation, keeping up in the one case the unilateral vascular spasm, while in the other cases vaso-motor susceptibility is about alike on both sides of the brain. I would also suggest the possibility that in this experiment lies an important diagnostic aid in the separation of these two groups of hysterical patients.

A certain amount of weight is thrown in favor of this vaso-motor theory by a case (I think unique) which I have recently seen through the kindness of Dr. H. W. Bradford, and reported elsewhere in full. The history was, in brief, that of a married lady, aged thirty-two, who had inherited no nervous tendency, but who, since the occurrence of pelvic disease with uterine displacement and offensive purulent discharge per vaginam, had shown slight mental disorder (principally accompanying menstruation) and decided hysterical tendency with motor and sensory disturbance, besides suffering from distressing left-sided migraine of the character commonly designated spastic (*hemisphæria sympathetico-tonica*). Examination revealed a right-sided hemianæsthesia including the special senses. The sight on this side was distinctive of hysteria, with amblyopia, loss of color-sense, and concentric retraction of the visual field. The sight in the *left* eye was *almost wanting*, there being only slight lateral fixation. The fundus of the right eye was normal. In the left eye the only abnormality found to account for the excessive loss of sight was an extreme contractility of the retinal blood-vessels, which under ophthalmoscopic examination contracted to one third their calibre, and the patient was unable to continue the examination. The accuracy of this observation is vouched for by Dr. Bradford, an experienced ophthalmoscopist, who verified it several times, and the most plausible explanation to be offered of this peculiar set of symptoms is that spasm of the blood-vessels on the surface of the left cerebral hemisphere had caused, by implication of the cortical cells, a right-sided hemianæsthesia including the sight, by reaching the meninges a left-sided spastic migraine, and by extension to the fundus of the left eye an intermittent retinal ischæmia. In view of the dating of the symptoms in a previously healthy patient from the ac-

cession of pelvic disturbance, we could not but suspect ovarian origin for the vascular spasm, and in case these symptoms should become severe enough to warrant extreme measures, other treatment failing, Tait's operation would certainly be considered. In point of fact, the only therapeutical pressure suggested, aside from local treatment, was nitro-glycerine in drop doses of the 1 % solution, under which the headaches seemed for a time to lessen, after which the patient relapsed into her previous condition.

Theoretical considerations with regard to the pathology of hysteria are secondary to the main question. Is hysteria ever set up by ovarian irritation, and if so can it ever be relieved by removal of the offending organs? We may, I think, safely answer both parts of this question in the affirmative. Out of the collection made by Battey of oöphorectomy cases between 1872 and 1881, epileptic attacks were present in twenty-six cases, and relieved in two thirds of the number. Since this collection was made a number of cases have been reported in which hysterio-epilepsy, dating from pelvic disease, has been cured by removal of the ovaries, and Carstens,¹ who has reported several such cases, sums up as follows: "In general I might conclude that Battey's operation is not only justifiable, but really we might say it is criminal neglect not to perform it, in cases which fail to be benefited by other treatment. It is a last resort after every other treatment has failed in cases which are caused by ovarian disease, such as hysterio-epilepsy, dysmenorrhoea due to fibroid tumors, and which either endanger the life of the patient or make life a burden to her." It is probable that to this list might be added cases of persistent hysteria in other forms, paralytic as well as epileptic, the condition being established that the cerebral disturbance is secondary to ovarian irritation.

¹ *Amer. Journ. of Obstet.*, March, 1883.

The following case, of which the important particulars have been given in a previous paper, will serve to illustrate the rôle which hysteria may play as an indication for operation.

CASE.—Miss A., a patient of Dr. Barss, of Malden, through whose kindness I was enabled to see her, was first examined by me Jan. 2, 1884 (before operation), with the following result :

The patient, aged twenty-nine, single, belongs to a family free from nervous and mental trouble. She has suffered from excessively painful menstruation, and more or less constant pain in the back, since puberty. Both these symptoms have increased in severity, and of late years various nervous symptoms have been superimposed. The pain in the back is now so severe and constant as to keep her in bed all the time, while the pain of menstruation is so intense during a period of two weeks, that she declares herself ready to undergo any operation rather than endure another sickness. The patient is very feeble, and has lost much flesh. She has been for some years subject to frequently recurring convulsive attacks, in which she is sometimes rigid, and sometimes shakes violently. No distinct opisthotonos has been observed. She has never been subject to attacks of laughing and crying, and no history of characteristic attacks of hysterio-epilepsy can be elicited.

Physical examination.—The patient is somewhat emaciated. The heart and lungs are normal. Palpation and percussion of the abdomen reveal nothing of interest beyond extreme sensitiveness to pressure over the ovarian region on both sides, most marked on the left. The patellar reflex is greatly exaggerated on both sides, most markedly so on the right ; the tap on the tendon producing a violent twitch of the entire body, and causing apparent distress. The pupils are alike, rather large, and react normally to light.

Motion.—There is no paralysis or atrophy of any muscle or group of muscles, but the strength is less on the entire right side than on the left, while deficient on both sides. A tonic contraction exists in the quadriceps femoris on the right, which interferes with attempts to bend the leg upon the thigh. There exists a wax-like rigidity in the right foot, which is very decided. This foot resists forcible movement in any direction, but yields gradually to firm pressure so as to assume any position required ; once placed in a new position, however awkward, as, for example, com-

pletely flexed at the ankle and everted, with the toes extended, the foot remains in precisely that position for some minutes, without causing the least discomfort, or in fact attracting the patient's attention. Left alone for some time, the foot so left gradually returns to an approximately normal position. The left foot shows a tendency to the same condition, though far less marked.

Sensation.—There is loss of all varieties of general sensation (heat, pressure, pain, touch) on the right side of the median line, including the head, trunk, and extremities. Only a comparatively heavy pressure of the finger is felt on this side, while the lightest touch is felt everywhere on the left. Stimuli causing pain on the left, as pinching and pricking, produce not the least sign of discomfort on the right, however suddenly applied.

The *taste*, tested with sugar and quinia, is wanting on the right, and present on the left. The same is true of the sense of *smell*, as tested by lemon and vanilla, this sense being peculiarly acute on the left side, while absolutely failing on the right.

The *hearing* by the bone is impaired on the right, and by the air is less acute than on the left. All tones are heard up to 4224 v. s., the hearing for very high tones unfortunately not being tested.¹ The membranes were not examined.

The *sight* offers the only exception to the anæsthesia, being above normal on both sides without glasses, there being also no retraction of the field of vision, nor trace of color-blindness.

Milder measures, local and general, having failed, it was thought best by Dr. Barss to perform oöphorectomy, an opinion heartily indorsed by myself.

The operation was performed by Dr. Barss, Jan. 24, 1884, and the following is quoted from the account kindly sent me by him : Thorough antiseptic rules were preserved, and the room was specially prepared for the purpose. An incision was made in the median line, both ovaries were ligatured with braided silk and cut off. The Fallopian tubes were not removed. Both ovaries (neither materially enlarged) were full of small cysts. The patient rallied well from the ether, but vomited considerably during the next thirty-six hours, after which she did well, eating and drinking nourishing food. Suppositories were used for some days. Two deep and all the superficial stitches were removed on the fifth day;

¹ Clinical researches made by the writer (since confirmed by other observers) show that the hearing by the bone and that for high tones disappear first in hysterical hemianæsthesia. See *Brain*, Jan., 1883; also "Verhandlung der physiologischen Gesellschaft zu Berlin," Feb., 1883.

the remaining two deep stitches were removed on the eighth day. The patient made a good convalescence, but continued to complain of pain in the lower part of the back. Twenty-four hours after operation a tarry discharge appeared per vaginam, which continued four or five days, since which time there *has not been the slightest sign of menstrual flow* (four and a half months after operation), though at each menstrual epoch she feels a good deal of uneasiness, and slight pain over the ovarian region (facts which lead to the expression of a regret on the part of Dr. Barss that the tubes were not removed as well as the ovaries). For a month or six weeks the patient gained steadily, then ensued a stationary period, ended at the beginning of the fourth month when she took another start for the better, seeming to eat, sleep, and feel generally better, though still complaining of pain in the lower part of the back. Dr. Barss adds: "She has been out to drive, caught cold, and is now suffering from cystitis. While I can not report a well patient, I think I am encouraged enough by the gain she has already made. The operation seems not only justifiable, but particularly so for the nervous trouble, for her greatest gain has been with regard to her nervo-hysterical symptoms. She does not have those jerky, jumping attacks, and I feel sure she has made a marked gain in this respect; if it were not for her backache—which I am in hopes will wear off—she would gain faster. * * * To sum up: here we have a patient whose nervous system is shattered by from twelve to thirteen years of ovarian disease. Operated on for the removal of both ovaries; four months later she has made marked improvement in nervous symptoms, is practically free from pain at the menstrual epoch, and has gained in flesh and appetite. Taking into consideration the length of time she has been suffering, I think we have a right to expect still greater improvement in one or two years."

The following facts with regard to the special hysterical symptoms are taken from my own notes made two months after the operation:

The hemianæsthesia is much lessened, the lightest touch being felt over the entire right side, though not quite so plainly as on the left. The substances which were not perceived at all by smell (lemon, vanilla) and taste (sugar, quinia) on the right side before the operation are now recognized on that side, though not so easily as on the other. The hearing through the bone as tested by the tuning-fork is much improved (r), and even the watch to the temple previously heard only on the left, is now heard on

both, though most plainly on the left. There is no trace of the wax-like rigidity in the left foot, and that in the right is much diminished ; the right foot when bent into an awkward position now falling back directly to a natural one, though not so completely as the left. The spasm of the quadriceps femoris on the right still persists. The tendon reflex is normal on the left, still exaggerated on the right, causing a twitch of the whole body, but less marked than before, while the distress caused by the tap is comparatively slight. The most marked improvement is with regard to the convulsive attacks, previously so severe and frequent, only two slight attacks having appeared since the operation.